

# Archives of Biochemistry and Biophysics

## Editors

E. S. G. BARRÓN  
PAUL D. BOYER  
JESSE P. GREENSTEIN  
E. NEWTON HARVEY  
J. G. KIRKWOOD  
K. LINDERSTRÖM-LANG  
C. M. McCAY  
THOMAS L. McMEEKIN  
A. NEUBERGER  
F. F. NORD  
E. C. POLLARD  
E. W. PUTNAM  
C. RIMINGTON  
JOHN C. SHEEHAN  
H. THEORELL  
K. V. THIMANN  
W. W. UMBREIT  
C. H. WERKMAN  
R. J. WILLIAMS  
R. W. G. WYCKOFF



VOLUME 58

1955

ACADEMIC PRESS INC., PUBLISHERS

# Archives of Biochemistry and Biophysics



Copyright, 1955, by Academic Press Inc.  
Made in the United States of America

## CONTENTS OF VOLUME 58

NUMBER 1, SEPTEMBER, 1955

|                                                                                                                                                                                                |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| NORMAN I. BISHOP, RUFUS LUMRY AND JOHN D. SPIKES. The Mechanism of the Photochemical Activity of Isolated Chloroplasts. I. Effect of Temperature.....                                          | 1   |
| M. H. HACK. A Method for the Estimation of Fatty Acid Esters..                                                                                                                                 | 19  |
| JOHN W. PATTERSON. Cataractogenic Sugars.....                                                                                                                                                  | 24  |
| CHARLES A. ZITTLE AND EDWARD S. DELLAMONICA. Separation of Proteins by Gradient Solvent Extraction of a Protein Precipitate.....                                                               | 31  |
| ERWIN SCHWENK, GEORGE J. ALEXANDER AND CHARLES A. FISH. Studies on the Biosynthesis of Cholesterol. VIII. Tissue Distribution of Cholesterol and Presence of Precursors in Intact Animals..... | 37  |
| HENRY TEDESCHI AND DANIEL L. HARRIS. The Osmotic Behavior and Permeability to Non-Electrolytes of Mitochondria.....                                                                            | 52  |
| R. A. BROWN, A. W. MOYER, M. C. DAVIES AND H. R. COX. The Interaction of Corticotropin with Bovine Albumin.....                                                                                | 68  |
| FRITZ STECKERL. The Ribonuclease Activity of the Cells of the Mouse Ascites Carcinoma of Ehrlich.....                                                                                          | 73  |
| ERIC HUTCHINSON AND KENNETH E. BEAN. The Hemolysis of Human Red Cells by Sodium Alkyl Sulfates.....                                                                                            | 81  |
| BERNARD B. LONGWELL AND ARNOLD E. REIF. The Relationship Between Uterine Growth and Accretion of the Succinoxidase System.....                                                                 | 92  |
| SJOERD L. BONTING. Colorimetric Determination of Pyruvic Acid and Other $\alpha$ -Keto Acids in Submicrogram Quantities.....                                                                   | 100 |
| RICHARD ABRAMS AND MARIAN BENTLEY. Biosynthesis of Nucleic Acid Purines. II. Role of Hypoxanthine and Xanthine Compounds.....                                                                  | 109 |
| A. ROSSI-FANELLI, G. F. AZZONE AND B. MONDOVI. Alkali Denaturation of Myoglobin and Hemoglobin. Studies on the Kinetics of the Reaction.....                                                   | 119 |
| F. L. ALLEN AND J. FRANCK. Photosynthetic Evolution of Oxygen by Flashes of Light.....                                                                                                         | 124 |

|                                                                                                                                                                                           |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| BOHDAN BAKAY, JOSEPH J. KOLB AND GERRIT TOENNIES. On the Component Proteins of Calf Thymus Nucleoprotein.....                                                                             | 144 |
| C. NEUBERG, A. GRAUER AND M. KREIDL. The Basis of the Carbamate Reaction.....                                                                                                             | 169 |
| IRENE S. FORREST. Enzymatic Hydrolysis of <i>O,O</i> -Diisopropyl Thionothiophosphate.....                                                                                                | 178 |
| YUTAKA KOBAYASHI AND RICHARD W. SCHAYER. Action of Rat Liver Monoamine Oxidase on Multiple Substrates.....                                                                                | 181 |
| T. J. BOND AND JAMES L. GILLELAND. The Influence of Some Polycyclic Hydrocarbons on the Nucleic Acid Concentrations in <i>E. coli</i> .....                                               | 189 |
| VINCENT J. PILEGGI, HECTOR F. DE LUCA AND HARRY STEENBOCK. The Role of Vitamin D and Intestinal Phytase in the Prevention of Rickets in Rats on Cereal Diets.....                         | 194 |
| PAUL H. MAURER. Immunochemical Comparisons of Various Gelatins and Their Derivatives.....                                                                                                 | 205 |
| C. E. DALGLIESH. Nonspecific Formation of Hydroxylated Metabolites of the Aromatic Amino Acids.....                                                                                       | 214 |
| GERHARD SCHMIDT AND RICARDO CUBILES. Comparative Studies on the Occurrence of the Carnosine-Anserine Fraction in Skeletal Muscle and Heart.....                                           | 227 |
| SAILEN MOOKERJEA AND D. P. SADHU. Metabolic Depression by Arsenite and Malonate and Cholesterologenesi.....                                                                               | 232 |
| A. ROSSI-FANELLI, N. SILIPRANDI, D. SILIPRANDI AND P. CICCARONE. Triphosphothiamine. I. Preparation and Crystallization of the Pure Compound. Some Chemical and Enzymatic Properties..... | 237 |
| LETTERS TO THE EDITORS                                                                                                                                                                    |     |
| PING-YUAN YEH. Side-Reaction in the Preparation of Dehydro- $\beta$ -Carotene.....                                                                                                        | 244 |
| HAROLD LEVY AND STANLEY KUSHINSKY. On the Mineralocorticoid Activity of $17\alpha,19$ -Dihydroxy- $11$ -deoxycorticosterone.—A Correction.....                                            | 245 |
| JACK W. NEWTON AND MARTIN D. KAMEN. <i>Chromatium</i> Cytochrome.....                                                                                                                     | 246 |
| ALVAH H. PHILLIPS AND ROBERT G. LANGDON. Incorporation of Monofluoroacetic Acid into the Nonsaponifiable Lipids of Rat Liver.....                                                         | 247 |
| E. G. BLIGH, R. D. H. HEARD, V. J. O'DONNELL, J. L. WEBB, M. SAFFRAN, AND E. SCHONBAUM. Formation of Corti-                                                                               |     |



|                                                                                                                                                                                                                                        |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| costeroids from Acetate and Cholesterol in Cell-free Hog Adrenal Preparations.....                                                                                                                                                     | 249 |
| J. LARNER AND R. E. GILLESPIE. Participation of Histidine in Catalytic Activity of Intestinal Carbohydrases.....                                                                                                                       | 252 |
| PIERO GULLINO, MILTON WINITZ, SANFORD M. BIRNBAUM, JEROME CORNFELD, M. CLYDE OTEY, AND JESSE P. GREENSTEIN. The Toxicity of Individual Essential Amino Acids and Their Diastereomers in Rats and the Effect of Blood Sugar Levels..... | 253 |
| PIERO GULLINO, MILTON WINITZ, SANFORD M. BIRNBAUM, M. CLYDE OTEY, JEROME CORNFELD, AND JESSE P. GREENSTEIN. The Toxicity of Essential Amino Acid Mixtures with Special Reference to the Protective Effect of L-Arginine.....           | 255 |
| Book Reviews.....                                                                                                                                                                                                                      | 258 |

#### NUMBER 2, OCTOBER, 1955

|                                                                                                                                                                                       |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| ROBERT W. COWGILL. The Fate of Certain Simple Imidazole Compounds in the Rat.....                                                                                                     | 265 |
| ARTHUR C. GENTILE AND AUBREY W. NAYLOR. The Metabolism of Rumex Virus Tumors. Respiration of Tissue Slices.....                                                                       | 270 |
| HANS KLENOW AND ROLF EMBERLAND. The Enzymatic Reaction between Ribose-1-Phosphate and Glucose-1,6-Diphosphate...                                                                      | 276 |
| HANS KLENOW. On the Nature of the Salt Inhibition of Some Reactions Catalyzed by Phosphoglucomutase Preparations.....                                                                 | 288 |
| MARY HEWITT LOVELESS AND SERGE N. TIMASHEFF. Fractionation of Ragweed Extract by Semicontinuous Electrophoresis-Convection.....                                                       | 298 |
| ANNE BUZZELL, FRANK B. BRANDON AND MAX A. LAUFFER. Effects of X-Radiation on Influenza Virus.....                                                                                     | 318 |
| DONN J. KUSHNER. The Action of Chloramphenicol on the Oxidation of Succinate and Related Compounds by <i>Pseudomonas fluorescens</i> .....                                            | 332 |
| DONN J. KUSHNER. The Basis of Chloramphenicol Resistance in <i>Pseudomonas fluorescens</i> .....                                                                                      | 347 |
| MEYER J. WOLIN, JAMES B. EVANS AND C. F. NIVEN, JR. A Study of the Methylene Blue and Oxygen Inhibition of Pyruvate Oxidation by <i>Micrococcus pyogenes</i> var. <i>aureus</i> ..... | 356 |
| JOHN P. WOLF III AND W. H. EWART. Carbohydrate Composition of the Honeydew of <i>Coccus hesperidum</i> L.: Evidence for the Existence of Two New Oligosaccharides.....                | 365 |

|                                                                                                                                                                                       |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| E. G. DASKALAKIS AND I. L. CHAIKOFF. The Significance of Esterification in the Absorption of Cholesterol from the Intestine...                                                        | 373 |
| Bo G. MALMSTRÖM. Metal-Ion Specificity in the Activation of Enolase.....                                                                                                              | 381 |
| Bo G. MALMSTRÖM. The Mediating Action of Metal Ions in the Binding of Phosphoglyceric Acid to Enolase and Bovine Serum Albumin.....                                                   | 398 |
| J. CERBULIS. Carbohydrates in Cacao Beans. II. Sugars in Caracas Cacao Beans.....                                                                                                     | 406 |
| MERLE S. MASRI AND KARL SINGER. Studies on Abnormal Hemoglobins. XII. Terminal and Free Amino Groups of Various Types of Human Hemoglobin.....                                        | 414 |
| HERMAN C. LICHSTEIN. The Biotin Requirements of the Genus <i>Propionibacterium</i> .....                                                                                              | 423 |
| MARIE A. FITZGERALD AND DAVID F. WAUGH. Characterization of a Heparin Cofactor Obtained from Bovine Plasma Fraction I....                                                             | 431 |
| WOJCIECH J. NOWACZYNSKI AND PAUL R. STEYERMARK. The Absorption Spectra of Steroids in "100 %" Phosphoric Acid.....                                                                    | 453 |
| A. G. NORMAN. The Effect of Polymyxin on Plant Roots.....                                                                                                                             | 461 |
| J. G. KEREIAKES, W. H. PARR AND A. T. KREBS. Studies on the Luminescence Efficiency of Biological Compound Solutions....                                                              | 478 |
| KENNETH V. THIMANN AND BABETTE S. RADNER. The Biogenesis of Anthocyanins. IV. The Inhibitory Effect of Methionine and other Sulfur-Containing Compounds on Anthocyanin Formation..... | 484 |
| LETTERS TO THE EDITORS                                                                                                                                                                |     |
| A. ROSSI-FANELLI AND E. ANTONINI. Purification and Crystallization of the Myoglobin of Salt Water Fish.....                                                                           | 498 |
| E. S. GUZMAN BARRÓN, MARINO VILLAVICENCIO AND DONALD W. KING, JR. CO <sub>2</sub> Fixation and Utilization of Ribose-5-Phosphate by Certain Normal and Tumor Cells.....               | 500 |
| P. BLANQUET, R. W. DUNN AND C. A. TOBIAS. Isolation and Quantitative Estimation of Iodide, Thyroxine and Substances Related to Thyroxine by Means of an Anion Exchange Resin.....     | 502 |
| WALTER MERTZ AND KLAUS SCHWARZ. Impaired Intravenous Glucose Tolerance as an Early Sign of Dietary Necrotic Liver Degeneration.....                                                   | 504 |
| JORGE AWAPARA AND V. M. DOCTOR. Enzymatic Oxidation of Cysteine-S <sup>35</sup> to Cysteine Sulfinic Acid.....                                                                        | 506 |

|                                                                                                                                                       |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| DAVID RACUSEN. Formation of Indole-3-aldehyde by Indole-acetic Oxidase.....                                                                           | 508 |
| W. G. FRANKENBURG AND A. A. VAITEKUNAS. Chemical Studies of the Nicotine Degradation by Microorganisms Derived from the Surface of Tobacco Seeds..... | 509 |
| DAVID L. HILL, KENNETH I. HAWKINS, AND HENRY C. ZAK. Decaborane Effect on Aerobic Utilization of Glucose by Yeast Cells.....                          | 512 |
| Book Reviews.....                                                                                                                                     | 515 |
| Books Received for Review.....                                                                                                                        | 522 |
| Announcement.....                                                                                                                                     | 523 |
| Author Index.....                                                                                                                                     | 524 |
| Subject Index.....                                                                                                                                    | 528 |
| Index of Book Reviews.....                                                                                                                            | 530 |

